

**STREAM:** Fall Creek

**DRAINAGE:** East Fork Jarbidge River

**GAWS COMPUTER NO.:** 170501,05,155,035,025,025

**SURVEY DATE:** August 10, 11, 16, and 17, 1993

**REPORT DATE:**

March 7, 1996

**WRITTEN BY:**

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**SURVEY METHODOLOGY:** The United States Forest Service Region 4, Level III Fisheries Habitat Survey Method (March, 1989) was utilized at five Sample Sites (SS's) on Fall Creek, at two SS's on an unnamed tributary (Trib. A) and at three SS's on another unnamed tributary (Trib. B). Each SS was preplotted on the United States Geological Survey, 7½ minute topographic maps of the area.

Upon locating a SS, a ¼-inch mesh block net was placed in the stream to serve as a barrier to downstream fish movement. The 100 feet of stream above the net at each SS was sampled for fish using a one pass effort with a Dirigo backpack electroshocker. Captured trout were measured (fork length), weighed, and returned to the stream following electrofishing.

Aquatic macroinvertebrate type and relative abundance were assessed visually, using random substrate inspection at each SS. The first of five habitat transects began at the end of each fish sample area. Additional transects were placed at 50 foot intervals. Stream discharge was calculated by using timed float velocity measurements and water width and depth measurements over a uniform length of stream. Both air and water temperatures were recorded at each SS with the use of a hand held thermometer.

**LAND STATUS AND ACCESS:** The entire Fall Creek drainage lies within the Jarbidge Wilderness Area of the Humboldt National Forest. A wilderness trail crosses the drainage and can be accessed from Sawmill Ridge located about 8.0 miles east of the town of Jarbidge via four wheel drive road or by driving 11 miles south of Murphy Hot Springs, Idaho.

**WATERSHED DESCRIPTION:** Fall Creek is a 4.1 mile long northeasterly flowing second order tributary to the East Fork of the Jarbidge River. Tributary A is a 2.5 mile long, first order stream that enters the mainstem of Fall Creek about 0.8 mile above the river confluence. Tributary B is also a 2.5 mile long first order stream that enters Fall Creek, 1.5 miles above the confluence of the river. The head of the Fall Creek drainage is bounded by the 10,793 ft., Jarbidge Peak to the north and the 10,838 ft. Materhorn peak on the south. The 2.3 mile long ridge between the two aforementioned peaks is all above 10,000 ft. and includes the 10,635 ft. Jumbo Peak and 10,695 ft. Square Top peak.

The topographic map shows Trib. B emanating from a small pond at 9613 ft. and another headwater drainage lake at 9223 ft.

Neither of the two lakes were inspected during the course of this survey effort. Both the mainstem and Trib. A of Fall Creek originated in channel above 9400 ft. according to the map. The Fall Creek drainage area encompasses about 6.63 sq. mi., and both tributary drainages cover about 2.2 sq mi. each. All streams ran through narrow, steep, V-shaped drainages. Mean drainage sideslope elevations above SS's averaged 73.6 %. Valley bottom width along the mainstem ranged from 7 ft. to 98 ft. and averaged 40 ft. wide. A and B tributaries had mean valley bottom widths of 30 ft. and 28 ft., respectively. The parent geology of the drainage is volcanic in origin (Million Scale Geologic Map of Nevada - 1977).

Dominant upland vegetation consisted of fir, pine, aspen, juniper, mountain mahogany, rock spray, ceanothus, sagebrush, currant, chokecherry, grasses and forbs.

**WATER STATUS:** The May, 1993 U.S. Soil Conservation Service, Snow Survey reported the Snake River Basin at an average of 135 % of normal (as % of normal water content). As late as August 10, 1993, S-1 on Fall Creek had a discharge of 14.6 cfs. Tributary A had a discharge of 4.9 cfs and S-2 on Fall Creek located just above the tributary confluence had a discharge of 7.6 cfs. One week later, Tributary B had a mean flow of 2.7 cfs and the upper three SS's on Fall Creek, above this tributary had a mean flow of 3.9 cfs. There may have been a loss of 1 cfs of flow in one week. Streamflows were estimated to be fast/rapid and at a "medium" stage during survey.

Riffle habitat / exposed substrate encompassed an average of 72 % of the habitat transect widths in Fall Creek, 68 % in Trib. A and 81 % in Trib. B. The mean water width and depth and maximum depths recorded in each stream are presented below in units of feet.

STREAM	MEAN WIDTH	MEAN DEPTH	MAXIMUM DEPTH
Fall	11.9	0.33	1.6
Trib. A	6.6	0.31	1.5
Trib. B	11.1	0.23	1.2

Fall Creek stream temperatures ranged from a morning low of 38°F at S-5 to an afternoon high of 53°F at SS-1. Tributary stream temperatures all ranged between 44°F and 48°F. Stream clarity was occasionally noted as "milky" as if coming from melt from an ice field.

**STREAM HABITAT CONDITION INDEX (HCI):** The average stream HCI was 59.3 % and 51.8 % of optimum or "poor" in the mainstem and in Tributary B, respectively. Both Fall Creek SS-3 and SS-4 had "good" overall HCI ratings. Most limiting to the overall HCI ratings in Fall Creek were pool structure, pool measure, and bank cover. The same HCI parameters plus % optimum streambottom were most limiting in Tributary B. Tributary A rated "fair" with a mean HCI score of 64.4 % of optimum. Pool structure was the lone

HCI factor rating "poor" in Tributary A. Percent of optimum scores for bank soil stability and vegetative bank stability, all rated "good" to mostly "excellent" except, where stream bank rock precluded much vegetative growth at the two highest elevation SS's.

**STREAM CHANNEL TYPE AND STABILITY:** Fall Creek and tributaries were steep. The mean measured gradient of Fall Creek, Trib. A and Trib. B was 13.2 %, 10.5 %, and 15.7 %, respectively. Fall Creek below Trib. B had an average gradient of 5.5 %, while above Trib. B the gradient was 18.3 %. The lower two SS's in Trib. B had a mean field measured gradient of 10.5 %. A Rosgen's A-2 type stream channel best describes Fall Creek and it's tributaries. The streambottom was composed of boulder (9%), rubble (23%), gravel (65%), sand/silt (3%), and other (<1%).

Seventy percent of the Stream Channel Stability (SCS) scores at SS's rated "good" stability while 30 % or three SS's rated "fair" stability. Sixty percent of the SS's had "fair" to mostly "poor" ratings for vegetative bank protection. Scores for upper bank woody debris jam potential rated mostly "fair". Forty percent of the SS's showed indicated "moderate" amount of upper bank mass wasting.

**RIPARIAN DESCRIPTION:** Riparian condition ratings all rated "good" during the mid-August survey period. All surveyed sites were classified as tree communities with fir, alder, aspen, and/or cottonwood being present singly or mixed with one or more other tree type. Riparian condition parameters that rated poorly included shrub density and percent ground cover. Shrub density was < 30 % at Trib. B and upper Fall Creek SS's. Vegetative ground cover was < 70 % at three Fall Creek SS's and along Trib. B. A-2 type streams often allow only limited soil development for flood plain development and, instead a coarse rocky streambank exists. Understory vegetation consisted primarily of mesic forbs and grasses. Streamside vegetation provided a good stream canopy averaging 42 % in Fall Creek, 66 % in Trib. A, and 49.5 % in Trib. B.

**HABITAT VULNERBILITY:** The Index of Habitat Vulnerbility (HVI) to management activities in Fall Creek was "high" at SS-3 and "moderate", overall (50.0). Both tributaries had HVI scores that indicated "low" habitat vulnerbility. Streambank sensitivity ratings as determined from the combined SCS scores for upperbank vegetative protection and lowerbank rock content averaged a score of 11.0 (4-14). A bank sensitivity score of >13 indicates that one season of moderate livestock grazing can result in damaged streambanks. The fact that all SS's had "good" to "excellent" lower bank rock protection, leaves little doubt that ungulate damage to these streams should be negligible despite the "poor" to only "fair" upperbank vegetative protection noted at 60 % of the SS's. No ungulate streambank damage was noted during the mid-August stream surveys in the Fall Creek Drainage. Since livestock grazing is not permitted within a large portion of the Jarbidge Wilderness, any ungulate damage in Fall Creek would have to come from mule deer, elk or domestic pack horses.

Substrate embeddedness ratings ranged from 0 at S-3 on Trib. B to 32.0 % at S-2 on Fall Creek. Overall, the amount of substrate embeddedness was quite low in the drainage.

**FISH POPULATION:** Rainbow/redband trout were captured at S-2 on Fall Creek and at S-1 in Trib. A. What was identified as two adult sized bull trout were seen in a deep pool at the beginning of S-1 on Fall Creek. An unidentified fingerling sized trout was seen but not collected at S-1 in Trib. B. The five measured redband trout ranged in length from 76 mm to 158 mm (FL) and averaged 132.8 mm. Lengths of captured redband trout indicated the possibility of three age classes. Fish distribution in the Fall Creek drainage is limited to the approximate 1.5 mi. of lower Fall Creek where the gradient averaged 5.5 % and the lower approximate 0.4 mi. of Trib. A and the lower approximate 0.3 mi. Gradients at S-1 on Trib. A and B was 8.5 % and 11.5 %. The estimated total population of redband trout was 26 catchables and 156 sub-catchables. In the mainstem of Fall Creek there were an estimated 53 catchable bull trout over the lower 0.5 mi. and 121 sculpins in the lower 1.0 mi. of stream. Sculpin estimations come from the two fish caught at S-2 that were 34 and 52 mm (TL). Electrofishing efficiency was deemed to be poor at S-1 on Fall Creek due to the greater flow and quality pool depth.

**ANGLER USE:** Fall Creek receives light fishing pressure. Angler 10% Questionnaire data for the period 1970 through 1979 shows that an average of 16 days were spent fishing Fall Creek by licensed anglers. The reported use during 1980 through 1989 only averaged 2.4 days. The remote location and close proximity of the East Fork Jarbidge River could explain the low fishing pressure on Fall Creek.

**AQUATIC MACROINVERTEBRATES:** Mayflies were common to abundant at all SS's. Mayfly family representatives noted in August included Baetidae, Heptageniidae, Siplonuridae and Ephemerellidae. Caddisfly larvae (stone cases, vegetation cases and free-living) were occasional to common throughout the drainage. Perlid stonefly nymphs were rare to common at all sites except, at SS-2 on Trib. A where they were not noted. Planaria were occasional to abundant at all but the two lowest elevation SS's. Black fly larvae were common at SS-2 on Trib. A. Moss/algae covered an average of 4 % of the fish population sample areas along Fall Creek; 5 % at Trib. B SS's; and 31 % at Trib. A SS's.

**BEAVER STATUS:** The only sign of beaver activity was that of an occasional cutting At SS-2 on Fall Creek and at both SS's on Trib. A. Inadequate amounts of willow and aspen and steep stream gradients would make the Fall Creek drainage unsuitable for beaver occupancy.

## CONCLUSIONS

**STREAM'S IMPORTANCE:** Fall Creek supports fishable native populations of rainbow/redband trout and the much less common, bull trout.

**RECOMMENDATION:** Additional fish surveys could be conducted to better delineate the presence and extent of the bull trout population.

TEXT.....	5
MAP.....	1
GAWS LEVEL I STREAM HABITAT INVENTORY - IDENTIFICATION LEVEL....	1
GAWS LEVEL III STREAM SUMMARY.....	3
GAWS LEVEL III HABITAT CONDITION INDEX OUTPUT FORMAT.....	7
GAWS LEVEL III STREAM HABITAT INVENTORY FORM.....	10
STREAM POPULATION SAMPLING FORM.....	10
SPECIES POPULATION INVENTORY SUMMARY.....	1
INVERTEBRATE DATA SHEET.....	1
VEGETATIVEANALYSIS.....	1
KODACHROME COLOR SLIDES.....	17

